

NEW COMBINATIONS IN *SYMPHYOTRICHUM* (SYN. *ASTER*, ASTERACEAE:  
ASTEREAE) SPECIES FROM NORTHEASTERN NORTH AMERICA

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submitted 21 November 1997

ABSTRACT

New combinations are proposed in *Symphotrichum* for the following taxa, originally described in *Aster*: *S. novi-belgii* (L.) Nesom var. *crenifolium* (Fernald) Labrecque & Brouillet, *S. novi-belgii* (L.) Nesom var. *villicaule* (A. Gray) Labrecque & Brouillet, *S. ontarione* (Wiegand) Nesom var. *glabratus* (Semple) Brouillet & Bouchard, and *S. robynsonianum* (Rousseau) Brouillet & Labrecque. Lectotypification of the latter is also proposed.

KEY WORDS: Asteraceae, Astereae, *Symphotrichum*, *Aster*, nomenclature, northeastern North America

Genus *Symphotrichum* (syn.: *Aster* subgenus *Symphotrichum*, Jones 1980) is a North American genus notorious for its difficult taxonomy. One of the problems is the correct application of names. While our treatment of the *Symphotrichum novi-belgii* complex in Québec and adjacent areas was being published with relevant synonymy under *Aster* (Labrecque & Brouillet 1996), the taxonomic revision of *Aster* s.l. by Nesom (1994) appeared. Meanwhile, Semple, *et al.* (1996) published their second revision of *Aster* for Ontario. In this floristic study, they used the name *A. robynsonianus* Rousseau (1957) for the taxon that had been improperly called *A.*

*longifolius* in their earlier study (Semple & Heard 1987). In another study, Bouchard (1994; Bouchard & Brouillet, in prep.) showed that a taxon that had been named *A. lateriflorus* var. *tenuipes* in western Quebec and Ontario was in fact a variant of *A. ontarionis* Wiegand. Semple, *et al.* (1996), using the results of this study, established a new variety in the latter species, *A. ontarionis* var. *glabratus* Semple. In order to ensure that a full, coherent taxonomy is available to authors who would prefer to use *Symphotrichum* for the  $x=8$  North American Asters, we propose the following new combinations.

*Symphotrichum novi-belgii* (L.) Nesom var. *crenifolium* (Fernald) Labrecque & Brouillet, *comb. nov.* BASIONYM: *Aster foliaceus* Lindley var. *crenifolius* Fernald, *Rhodora* 17:15. 1915. (LECTOTYPE: GH!; Isolectotype: MT!).

*Symphotrichum novi-belgii* (L.) Nesom var. *villicaule* (A. Gray) Labrecque & Brouillet, *comb. nov.* BASIONYM: *Aster longifolius* Lamarck var. *villicaulis* A. Gray, *Syn. Fl.* 1(2):189. 1884. (HOLOTYPE: GH!).

The combination *Aster novi-belgii* L. var. *villicaulis* (A. Gray) B. Boivin was published by Boivin (1967). This fact appears to have escaped the attention of some taxonomists.

*Symphotrichum ontarione* (Wiegand) Nesom var. *glabratus* (Semple) Brouillet & Bouchard, *comb. nov.* BASIONYM: *Aster ontarionis* Wiegand var. *glabratus* Semple, *Univ. Waterloo Biol. Ser.* 38:60. 1996.

Although this name identifies a taxon regularly collected along rivers in Ontario and western Québec, mainly in calcareous or clay areas, we are uncertain after our study (Bouchard 1994; Bouchard & Brouillet, in prep.) whether it represents a variety or whether it is phenotypic plasticity of leaf hairiness in a wetter habitat; in our paper in preparation, we did not choose to formally recognize the shoreline variant. The matter remains to be investigated more thoroughly.

*Symphotrichum robynianum* (Rousseau) Brouillet & Labrecque, *comb. nov.* BASIONYM: *Aster robynianus* Rousseau, *Bull. Jard. Bot. Etat Bruxelles* 27:378-379, fig. 37. 1957. TYPE: CANADA. Québec, Lac Mistassini, Ile Couture, sur les tables de calcaire dolomitique des rivages, 8-11 août 1944, *Rousseau & Rouleau 1534* (LECTOTYPE [here designated]: GH!).

Synonyms: *Aster longifolius* sensu Semple & Heard non Lamarck; *Symphotrichum longifolium* sensu Nesom non Lamarck.

This taxon was brought to the attention of botanists by Semple & Heard (1987) in their treatment of the Asters of Ontario. For lack of a name and because of the great morphological similarity of this entity to the eastern seaboard, narrow-leaved members of the *Aster novi-belgii* complex, these authors used the name *A. longifolius* Lamarck. They believed that the taxon was a high polyploid race ( $2n = 64, 80$ ; see also

Labrecque & Brouillet 1996) of this highly variable, northeastern maritime complex. Earlier, Jones (1980) had used the epithet *longifolius* for a different coastal taxon presumably allied to *A. praealtus*. In his treatment, Nesom (1994) followed Semple & Heard, and transferred this taxon to *Symphyotrichum* as *S. longifolium* (Lamarck) Nesom. Our examination of photographs of the type specimen led us to the conclusion that *A. longifolius* is a synonym of *S. novi-belgii* (Labrecque & Brouillet 1996). The type was cultivated in the Jardin des Plantes in Paris and probably originated from the east coast, a region where narrow-leaved individuals are frequent. All members of *S. novi-belgii* are  $2n = 48$  (Labrecque & Brouillet 1996). The only narrow-leaved species with  $2n = 80$  on the northeastern seaboard is the Gulf of St. Lawrence endemic *Symphyotrichum anticostense* (Fernald) Nesom, which differs from *S. longifolium* by its stiffer, spreading, arcuate leaves, more numerous heads per branch (often more than 2 vs. at most 2), and less imbricate involucre (although this character is variable) with apparently less squarrose bract tips (as observed on well-developed, live material of *S. longifolium*) (Brouillet & Labrecque 1987; Labrecque & Brouillet 1990, 1996). The two taxa are allopatric, but both occupy calcareous shoreline habitats. Since *S. longifolium* is a synonym of *S. novi-belgii*, the name cannot be applied to the distinctive, northcentral, boreal taxon. Likewise, the taxon cannot be identified to *S. anticostense*. That *S. longifolium* is biologically distinct from *S. novi-belgii* is emphasized by the difference in chromosome numbers (see above): 80 is not a straightforward multiple of 48, which suggests that allopolyploidy occurred, as in *S. anticostense*. Therefore, a new name must be found for the species. It is of historical interest to note that in the Jussieu herbarium (examined on microfilm), a specimen of this species collected by William Sherard, probably near a Hudson Bay trading post, was named *A. hudsonianus*; no description was ever published, however.

In 1957, Rousseau described a new species of *Aster* from the riparian limestone pavements of Lake Mistassini in central Québec, named *A. robynsianus* in honor of Dr. Walter Robyns, director of the Bruxelles Botanical Garden until 1956, to whom the volume of the Bulletin was dedicated. Jones (1987) synonymized this taxon with *A. novi-belgii* var. or subsp. *johannensis*. Examination of a lectotype and of paratypes (GH), as well as of Ontario and Québec material, lead us to conclude that this is the species erroneously named *A. longifolius*, as we suggested to Semple (Semple, *et al.* 1996). Rousseau did not specify a holotype but designated the whole collection number 1534 as the type, without specifying the herbarium where it would be deposited. The description is accompanied by a photograph of two unmounted specimens, without label, presumably from what should have become the holotype. We searched for the type in all herbaria where it was likely to have been deposited at the time or subsequently (MT, QUE, QFA, GH, BR). The only authentic material we were able to find is at GH; this material does not include the specimens illustrated on the photograph. Nevertheless, the material clearly belongs to the type collection (no. 1534) and is similar to the photograph specimens, although not identical with them. Therefore, the material at GH cannot be considered to be the type itself, but represents good lectotype material. Therefore we are proposing to lectotypify this species using the specimen deposited at GH. It is possible that the holotype will be found eventually among material that was never mounted.

In their treatment of Ontario asters, Semple, *et al.* (1996) mention that the species is found from central Wisconsin eastward, mostly north of the Great Lakes. The species reaches northwestern Québec in the Abitibi-James Bay lowlands, the

easternmost extension of the Clay Belt, and is disjunct to Lake Mistassini (central Québec), the type locality, and to Grand Remous along the Gatineau River, in the western Laurentian hills north of Ottawa. The species appears to be associated with seasonally disturbed, riparian situations and a calcareous substrate, either clay deposits (e.g., Clay Belt) or limestone outcrops, and all are found within the boreal forest region. This ecology would help explain the disjunct distribution of the species in Québec. Disjunct populations are on limestone pavements on the shore of Lake Mistassini or on the rapids at Grand Remous. This type of rock is discontinuously distributed within the igneous formation of the Canadian Shield, laid bare after the Late Wisconsinan glaciation. The distribution of *Symphyotrichum robynsonianum* in northern Ontario-western Québec is centered on the Clay Belt, a feature produced during ice retreat by pro-glacial lakes Ojibway and Barlow. A narrow lake also extended north from the Champlain Sea along the Gatineau River valley. It is therefore possible to envision that the expansion of the species from a refugium south of the ice sheet, possibly southwest of the Great Lakes, followed the progression of proglacial lakes as ice retreated, accompanying the spread of the boreal forest. The progression of the lakes went roughly from southwest to northeast. The rivers draining the lakes, as well as the lakeshores, would have provided ample habitat for the taxon and ample migratory routes. It survives today on river and lake shores where the substrate is somewhat calcareous.

The parents of *Symphyotrichum robynsonianum* are more difficult to identify. Semple, *et al.* (1996) hypothesize it may be more closely related to the western Foliacei. The taxon is probably an allopolyploid of pro-glacial origin. Such an origin has been postulated for *S. anticostense*, which appears to descend from the hybrid *S. novi-belgii* X *S. boreale* (Torrey & A. Gray) Löve & Löve (Labrecque & Brouillet 1990). Semple & Heard (1987) suggested *S. novi-belgii* as a possible relative. This species probably never reached the Great Lakes region during glacial times, however: it was essentially coastal (Labrecque & Brouillet 1996). Even today, the two are not sympatric, although they come relatively close in the Laurentian Hills north of Montréal. But such closeness would be a relatively recent phenomenon compared with the hybridization event likely responsible for the birth of *S. robynsonianum*. While we cannot reject totally *S. novi-belgii* as a parent, it appears unlikely to us. A geographical origin southwest of the Great Lakes is possible for the taxon, but probably not from west of the Rockies. This problem is left unsolved for the time being.

#### ACKNOWLEDGMENTS

We thank Stuart G. Hay for having brought the Rousseau paper to our attention, Frederic Coursol for having collected a live specimen of *Symphyotrichum robynsonianum* at Grand Remous, and the curators of CAN, GH, QUE, and BR for loans and for their assistance in locating the type specimen. Guy Nesom greatly stimulated us in publishing this paper.

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